

ACTION PLAN FOR EFFECTIVE MINE WATER REMEDIATION IN WAKE OF GOLD KING MINE BLOWOUT - A SCIENCE BASED PROPOSAL

The breach of Colorado's Gold King Mine adit dam on August 5, 2015, resulted in release of millions of gallons of mine wastewater containing toxic metals into streams and rivers flowing through Colorado, New Mexico, Utah, and lands of the Navajo Nation. Local and state governments and federal agencies continue to grapple with the immediate impact of the tragic spill on local environments and economies throughout the affected region.

The widely publicized Gold King Mine blowout illuminates the technical problems that have long plagued the remediation of mining districts. Frequently, mine reclamation has been piecemeal, addressing localized symptoms, not root causes of the larger safety and environmental problems and threats. Because these individual efforts are not coordinated they can do more harm than good.

The limitations and risks associated with current approaches can no longer be accepted. Attention now must turn to the development of effective tools that address the full problem and can prevent future, potentially catastrophic, releases of contaminated mine water.

The enormous scale of mine development in many of Colorado's historic mining districts underscores the immediate need to design, implement, and evaluate a sweeping new science-based approach to mine remediation. These projects need to produce a basin wide remediation place which coordinates all future efforts. **This project proposed by the Town of Silverton and San Juan County, Colorado, would, for the first time, produce a full-scale model of the entire region's hydro-geo-chemical system,** a model that would allow for the quantitative evaluation of remediation alternatives and point to the safest, cleanest, and most economically efficient approaches.

The four-phase proposal includes:

- 1) Construction of a water treatment facility on Cement Creek, downstream of the Gold King Mine drainage, to immediately reduce toxic metal loads in the water;*
- 2) Development of the regional remediation systems model and remediation design plan based on existing and continuing research;*
- 3) Implementation of the plan, including the installation of a monitoring network, bulk-heading mine portals, developing passive water treatment methodologies, and removing mine waste sites that threaten the watershed; and*
- 4) Continued monitoring, assessment, and evaluation of hydro-geo-chemical changes by scientists and engineers, and continuous improvement of remediation systems and model predictions.* Results of this monitoring phase also would be expected to guide future scientific study and development of new technology.

While the project would be conducted in the Animas River Basin affected by the Gold King Mine disaster, the organizational and technical remediation tools developed would lend themselves to applications in mining complexes across America.